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Farm Mechanisation and Productivity in Farming

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ABSTRACT

A study was conducted with 100 marginal, 75 small and 50 medium randomly selected farmers of 18 randomly selected villages in Haringhata block, Nadia district West Bengal. The level of farm mechanisation of the small and medium farmers were of the same order and were significantly higher than that of the marginal farmers. Correlation coefficients between farm mechanisation index and productivity in farming were found to be positive and significant in respect of small, medium and pooled sample of farmers.

Use of farm machinery not only saves human and animal labour but also ensures performance of various farm operations more efficiently and in time. Use of farm machinery may, therefore, lead to higher production of crops.

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MATERIALS AND METHODS

Farm mechanisation : It was measured by farm mechanisation index developed by Samanta (1977). In this index 13 items such as tractor, power tiller, discharrow, cultivator, trailor, mould board plough (bullock drawn), seed drill, pumping set, wheelhoe, paddy weeder, duster, sprayer and thresher which were given weights varying from 3 to 1 according to their degree of contribution toward farm mechanisation. It was calculated for each individual farmer by the following formula.

$$\text{Farm Mechanisation Index} = \sum_{j=1}^{N} W_j \times t_j$$

Where,

W_j = weightage of the jth item,

t_j = total period in year of the jth item has been used, and

N = total number of item selected by a farmer.

Productivity in farming: It was measured by crop yield index formula developed by Yang (1980). For this purpose six principal crops of the area, i.e. Jute, Paddy (*aus*, *aman* and *bor*), Wheat, Potato, Pulses (gram, lentil, *mung*, *urid* and pea) and Oilseeds (*tori*, *rai* and *til*) were taken into consideration.

Area of study and selection of respondents: The study was conducted in Haringhata block of Nadia district, West Bengal. There are 9 Gram Panchayats in Haringhata block. From each gram panchayat 2 villages were selected at random on the basis of probability proportion to the number of households in villages. The farmers in each of the 18 selected villages were stratified into three categories-marginal (below 1 hac.), small (1-2 hac.) and medium (more than 2 hacs.).

A proportionate random sample was drawn from each of the three categories of farmers in such a way that there were at least two respondents from each category from each village and the size of sample was not less than 4 per cent of the population. In this way, 100 marginal, 75 small and 50 medium (total 225) respondents were selected which formed the sample of the study.

The data were collected from January to March, 1981.

RESULTS AND DISCUSSION

Level of farm mechanisation of the marginal, small and medium farmers:

The mean values of farm mechanisation indices of the marginal, small and medium farmers were found out. The significance of difference between the mean values of farm mechanisation indices were tested by analysis of variance and are presented in Table 1.

Table 1 indicated that the mean farm mechanisation scores of the marginal, small and medium farmers were 55.39, 88.92 and 91.20 respectively. The computed 'F' value was found to be significant at 1 per cent level. The critical differences indicated that the level of farm mechanisation of the small and medium farmers were of the same order and were significantly higher than that of the marginal farmers.

Relationship of farm mechanisation index with productivity in farming:

Zero-order correlation between farm mechanisation index and productivity in farming as measured by crop yield index were computed separately for the marginal, small, medium and pooled samples of farmers and are presented in Table 2.

It was revealed from Table 2 that no significant relationship between farm mechanisation index and productivity in farming was observed in case of marginal farmers. This may be because of their low level of use of farm machinery.

TABLE 1

Significance of difference in the mean values of farm mechanisation index of the marginal, small and medium farmers.

Variable	*Unit*	*Mean values*			*F Value*
		Marginal farmers (N=100)	*Small farmers (N=75)*	*Medium farmers (N=50)*	
Farm mechanisation index	Score	55.39	88.92	91.20	20.68**

**Significant at 1 per cent level.

Critical difference at 5%

Marginal Vs. Small	*Marginal Vs. Medium*	*Small Vs. Medium*
11.96	13.56	14.29

Note: Mean values of the same order (i.e. having no significance difference) have been underlined.

TABLE 2

Relationship of farm mechanisation index and productivity in farming of the marginal, small, medium & pooled sample of farmers.

Farmers categories	*Correlation Coefficient*
Marginal farmers (N = 100)	0.167 NS
Small farmers (N = 75)	0.891**
Medium farmers (N = 50)	0.958**
Poolld sample of farmers (N = 225)	0.423**

**Significant at 1 per cent level.
NS = Not significant.

The correlation coefficients between productivity in farming and farm mechanisation index of the small, medium and pooled sampic of farmers were, however, positive and significant at 1 per cent level.

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